GreenEye Monitor

“Smart Energy Groups” Setup Guide

For GEM model: ***All***

Document Code: ***SEG***
Ver 3.1
2013-09-25
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INTRODUCTION

Smart Energy Groups (www.smartenergygroups.com) is a data hosting site compatible with the GreenEye Monitor. Data may be forwarded to this site over the internet where SEG stores the data and provides a means of viewing the data using customizable dashboard charts and gauges.

This manual describes the procedure for setting up a GEM system to post data directly to SEG. The three main tasks required to accomplish this are:

1. Create a SEG account and obtain a "token"
2. Configure the GEM to send data to SEG
3. Connect to the SEG account to discover the GEM and name each channel

Once these three tasks have been performed, you may refer to the information on the SEG site and create custom dashboards.

Please take note that at the time of this writing, the SEG site is a free service offered by Smart Energy Groups. Please show them appreciation for their kindness.

CREATE A SEG ACCOUNT

STEPS

The first task required to allow the GEM to send data to SmartEnergyGroups.com is to go to their site using any web browser and create an account.

Steps

1. In any web browser, navigate to “http://www.smartenergygroups.com/”.
2. Click the **Join Us** link in the top right.
3. Fill in the required fields.
4. Click the **come and join us** button. After joining an activation link will be sent to your email.
5. Log into your email and click the activation link.
6. Log into your newly created SEG account.
7. Select the **My Things** menu then click **sites**. (see Figure 1)

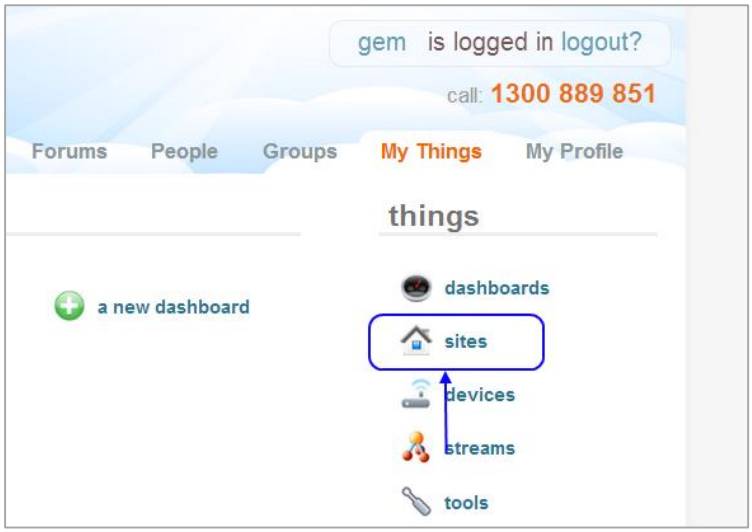

Figure 1

8. Click **add a site** in the My Sites section (Figure 2)

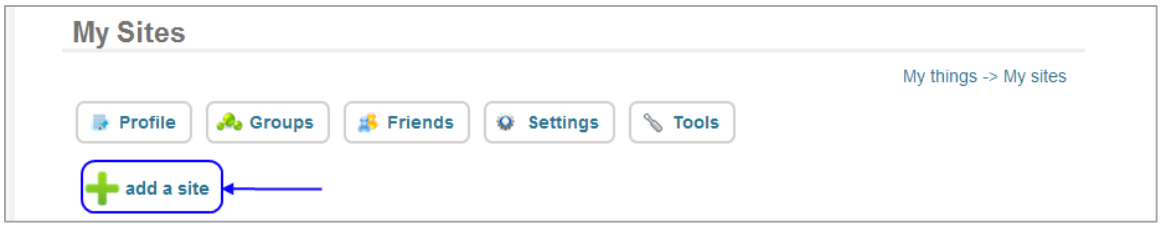

Figure 2

9. Fill in the information under **add a site** (Figure 3). The only required field is **your site** name, although the address and postal code is helpful in determining the time zone automatically.
10. Click the **Save** button. A discovery process will begin (see Figure 4)
11. Click the button in the bottom right of the discovery box

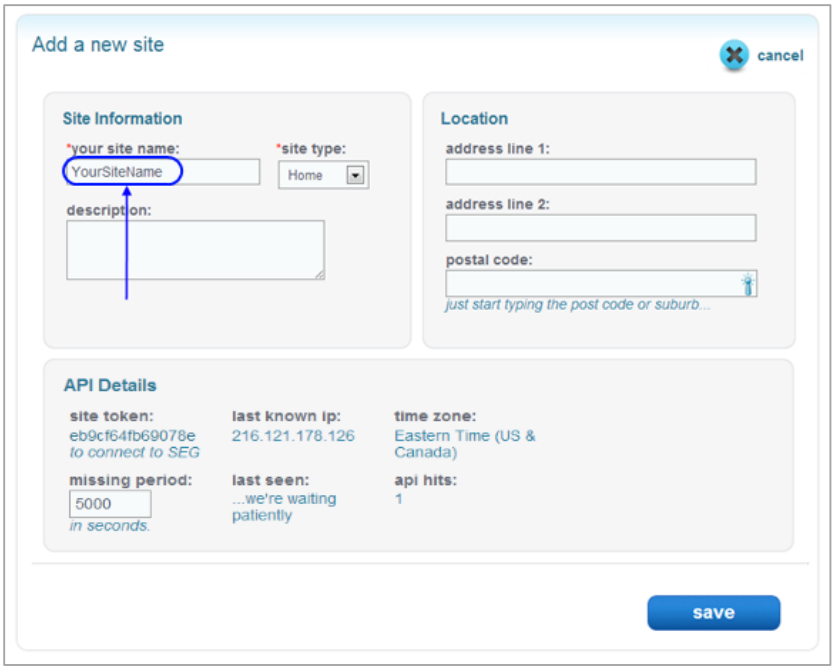

Figure 3

Figure 4

12. Click the **Edit icon** in the top right as shown in Figure 5

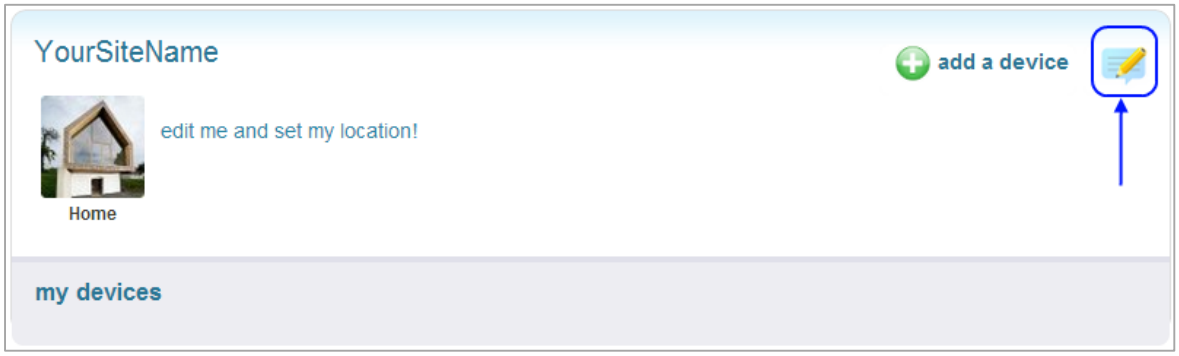

Figure 5

13. The site token will be required during GEM configuration, leave the browser window open as you'll need to revisit it after configuring the GEM. Open a new window and go to the GEM setup page.

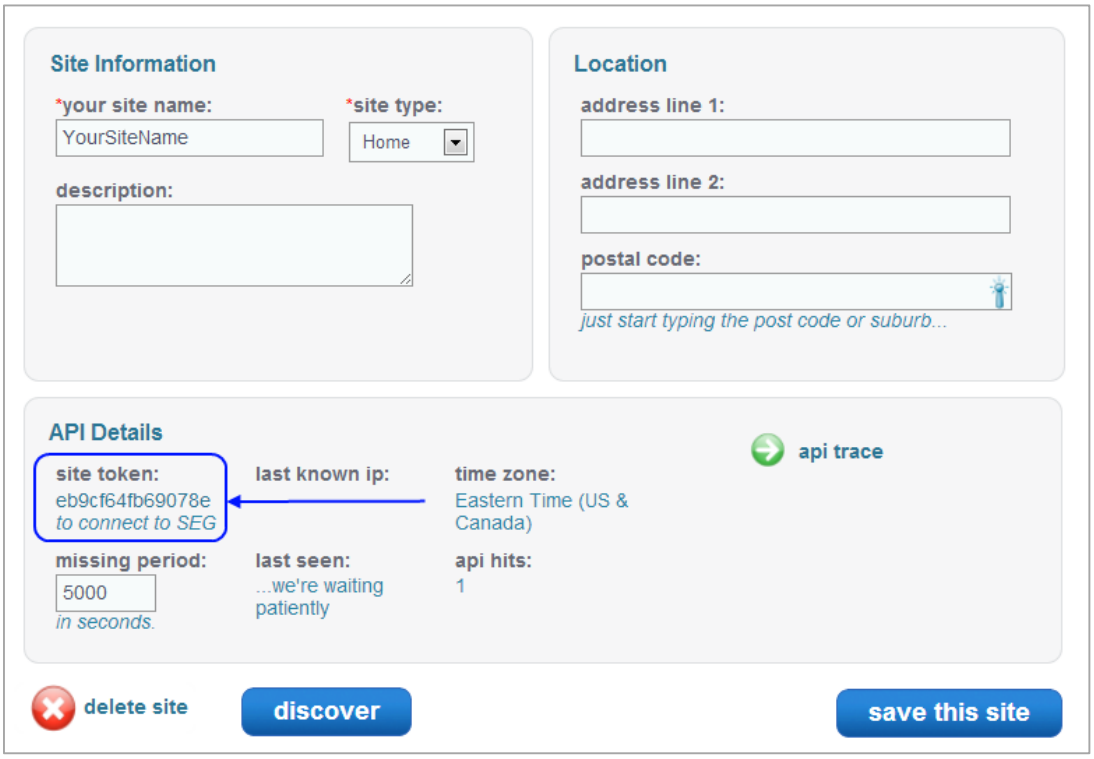

Figure 6

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GEM CONFIGURATION

At this point, it's assumed that you already know how to make a connection to the GEM setup page. If not, read one of the following setup manuals that is associated with our communication options:

- GEM-SET-W (WiFi)
- GEM-SET-E (Ethernet)
- GEM-SET-WE (WiFi/Ethernet)

PACKET SETUP

1. Open a new browser window and navigate to the GEM's setup page.
2. Click the **Enter Setup Mode** button. If password protection is enabled, you will have to input your password before entering Setup Mode.
3. Click **Packet Send** from the top menu bar. (Figure 7)

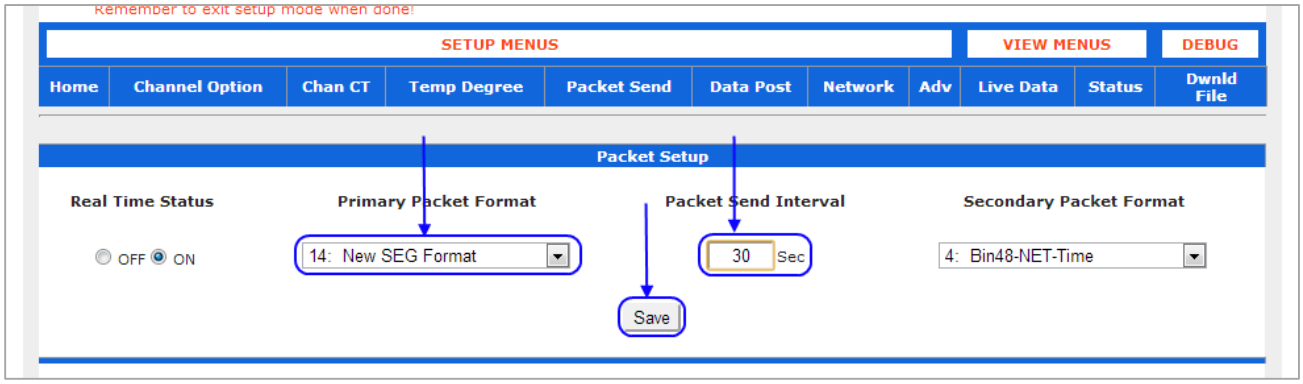

Figure 7

4. Set the **Primary Packet Format** to "New SEG Format". (Figure 7)
5. Set the **Packet Send Interval** to a value of 15 seconds or greater.
6. Set the **Real Time Status** to "ON".
7. Click the **Save** button.

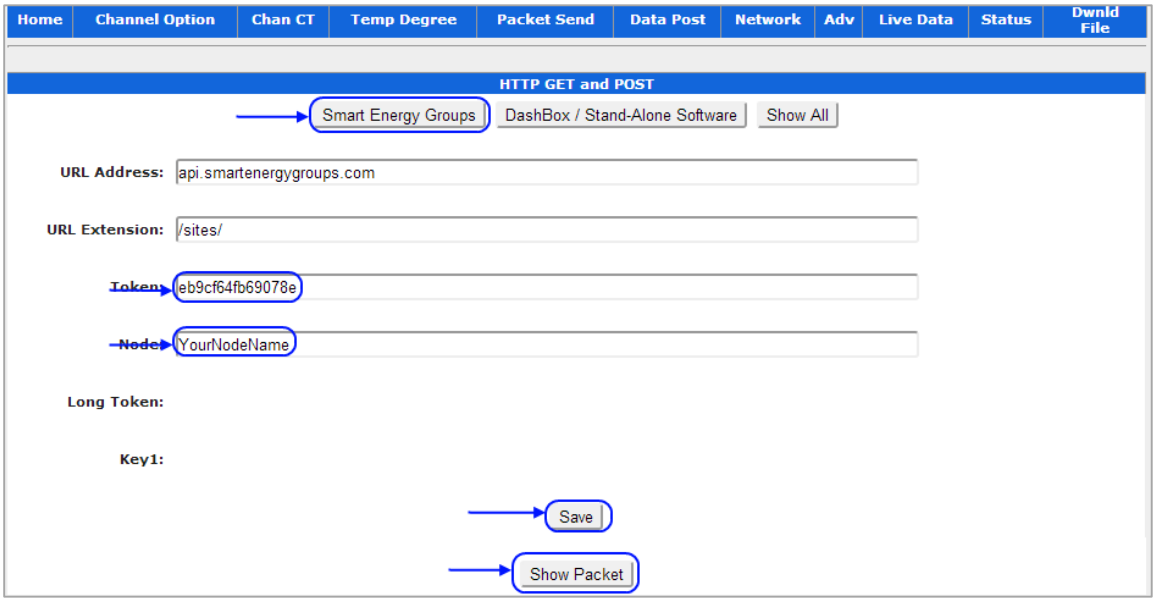

Figure 8

8. Click **Data Post** from the top menu bar. (see Figure 8)
9. Click the **SmartEnergyGroups** button. This will auto-populate the URL Address and URL Extension fields, also it will enable the Node and Token text boxes.
10. Copy the **site token** that was found previously (Figure 6) in the other browser window. This can be done by highlighting the text then right clicking the mouse and selecting **Copy**. Once copied, delete the present contents of the **Token** box (Figure 8) and **paste** the token. Alternately, you can manually enter the token. Make sure there are no leading or trailing spaces.
11. Enter a **Node** name of your choosing. The **Node** defines what the device is called, such as "MyHouse", "GEM1", etc. The node name cannot contain spaces.
12. Click the **Save** button**.**

Further down the Packet Send setup page are groups of checkboxes which allows you to select which channels will be sent to the SEG webhost. See Figure 9. It is preferable not to send unused channels to avoid wasting memory space, bandwidth and improving performance. If you plan on adding one or more unused channels in the future, this can easily be included at that time. SEG will discover the additional channels and add them.

Note that there are two group boxes to select the desired channels. **Complete each group one at a time.**

13. Select the channels from the CH1 to CH24 section that you want to send to SEG. (Figure 9)
14. Click **Save** to complete that section.
15. Select the channels from the CH25 to CH32, temperature and counter channels section that you want to send to SEG. (Figure 9)
16. Click **Save** to complete that section.

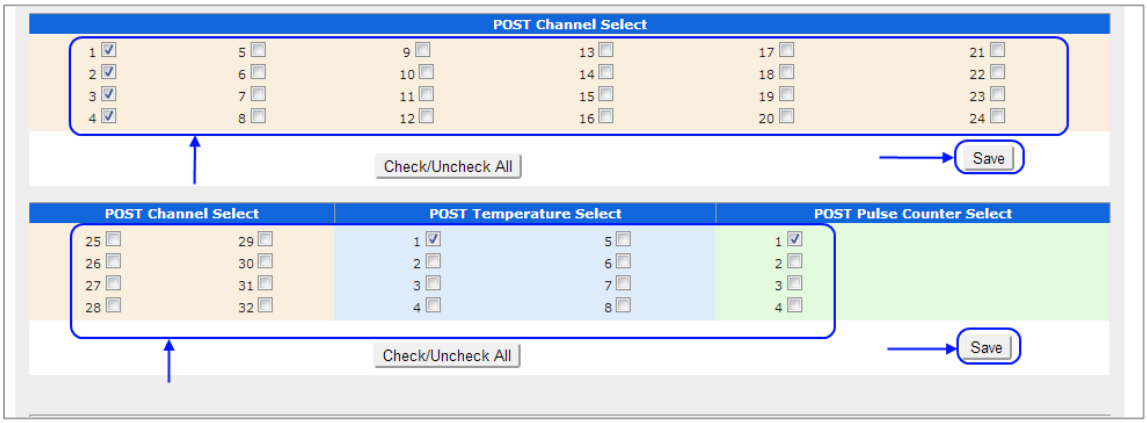

Figure 9

At this point, you can view the packet to confirm everything is entered correctly.

17. Click the **Show Packet** button. The packet will be revealed and similar to that in Figure 10.

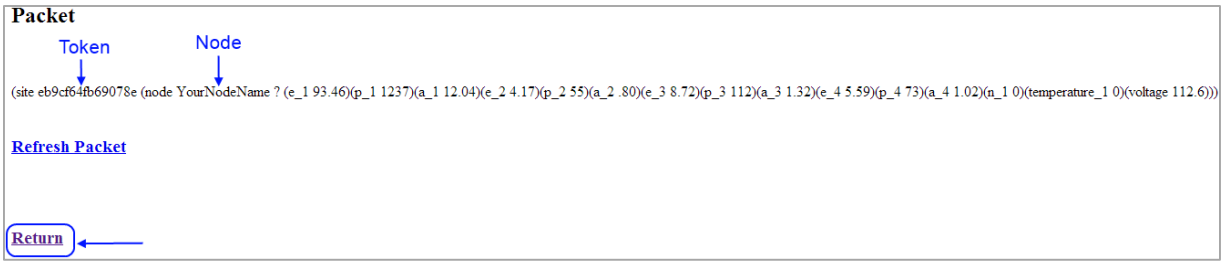

Figure 10

18. Click the **Return** link.
19. Click the **Adv** (advanced) menu button.

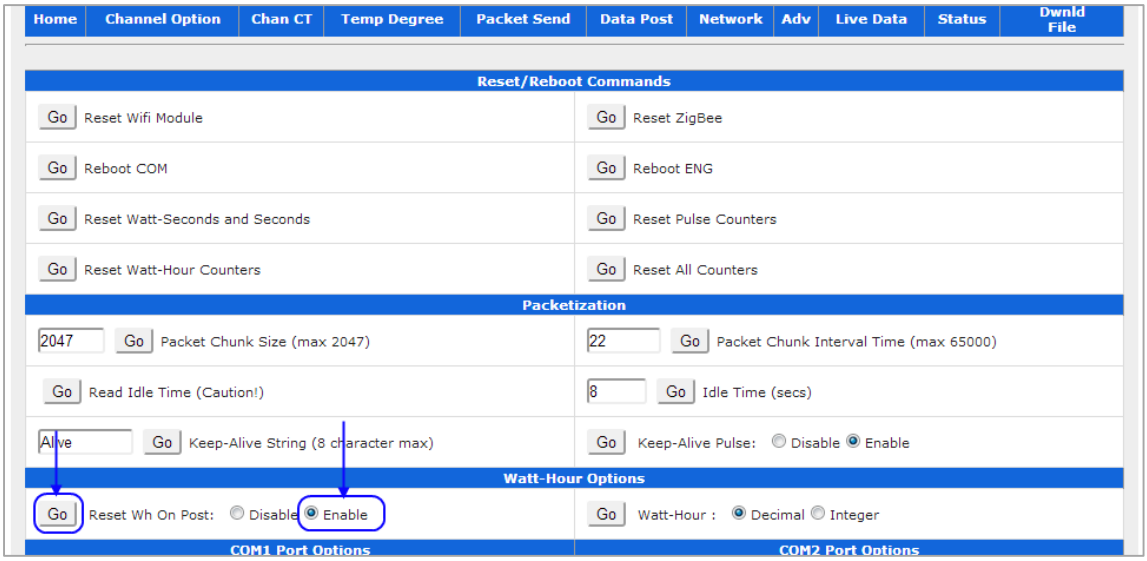

Figure 11

20. Click the **Enable** radio button for the **Reset Wh On Post** option
21. Click the **Go** button.

If the GEM has the "WiFi-only" option then skip the next step and proceed to "Communication Setup (WiFi Module) Chapter"

22. Click **Exit Setup**. This step is important! Failure to do so will prevent the GEM from sending packets for up to 15 minutes which is the time it takes for the GEM to auto-exit the setup mode.

COMMUNICATION SETUP

COMMUNICATION SETUP (ETHERNET MODULE)

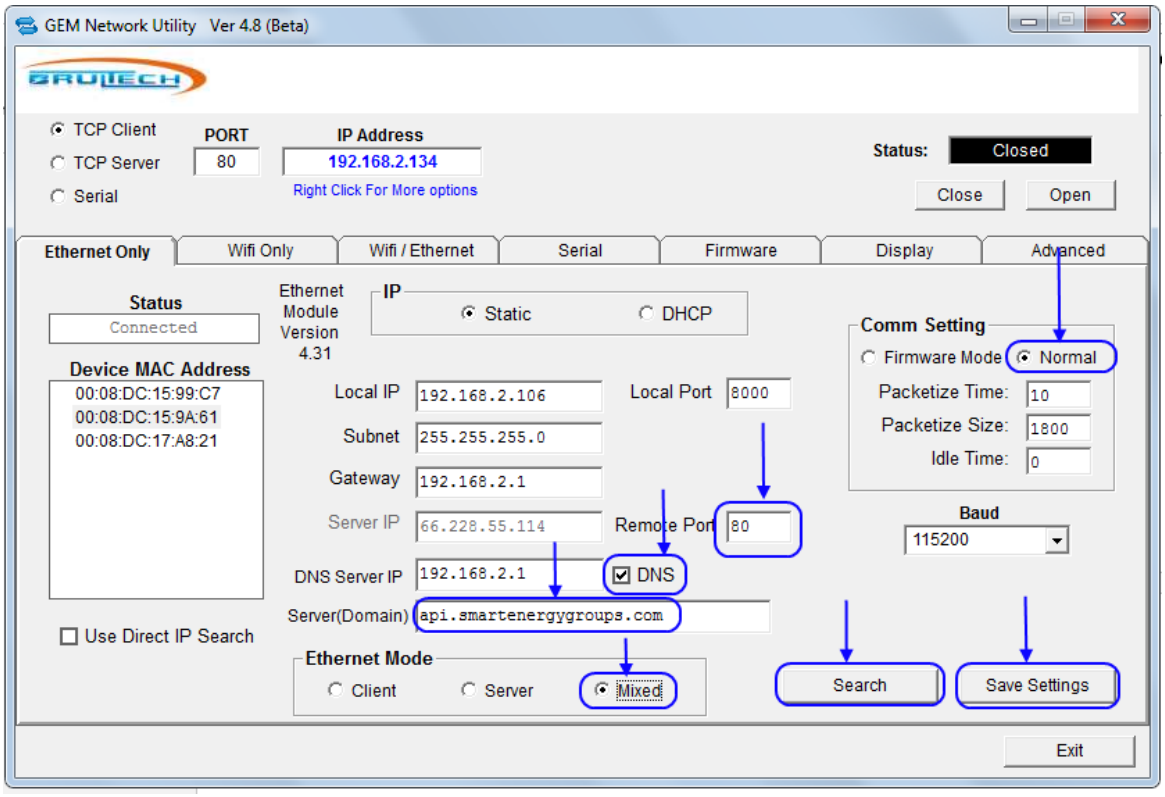

Figure 12

Open up the GEM Network Utility (Figure 12) available from www.brultech.com/software

Refer to Figure 12:

1. Select the **Ethernet Only** tab.
2. Click the **Search** button. A **Device MAC Address** should appear in the corresponding box on the left (Figure 12).
3. Set the **Remote Port** value to “80”.
4. Click the **DNS** checkbox.
5. Set the **Server(Domain)** to “api.smartenergygroups.com“.
6. Set **Ethernet Mode** to “Mixed Mode”.
7. Set the **Comm Setting** to “Normal”.
8. Click the **Save Settings** button.

COMMUNICATION SETUP (WIFI/ETHERNET MODULE)

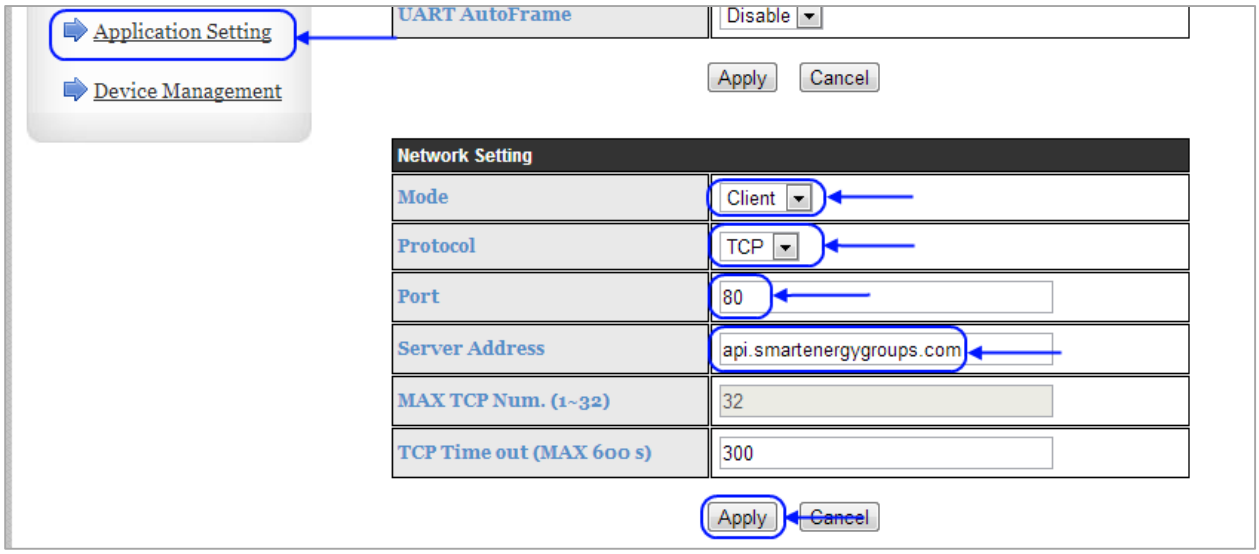

Figure 13

Refer to Figure 13:

1. Log into your WiFI/Ethernet module's setup page.
2. Click on the **Application Setting** menu option.
3. Enter the following settings:
    - Set the **Mode** to "Client".
    - Set the **Protocol** to "TCP"
    - Set the **Port** to "80"
    - Set the **Server Address** to "api.smartenergygroups.com"
    - Click the **Apply** button.
4. Click on the **Device Management** menu option.
5. Click the **Restart** button.

The Restart button causes the settings to take effect and re-boots the communication module.

Once the GEM starts sending to SmartEnergyGroups.com, you will no longer be able to access the GEM setup page unless you set the WiFi/Ethernet module back to **Server** mode and change the port number to something other than 80 (Port 8000 is recommended).

COMMUNICATION SETUP (WIFI MODULE)

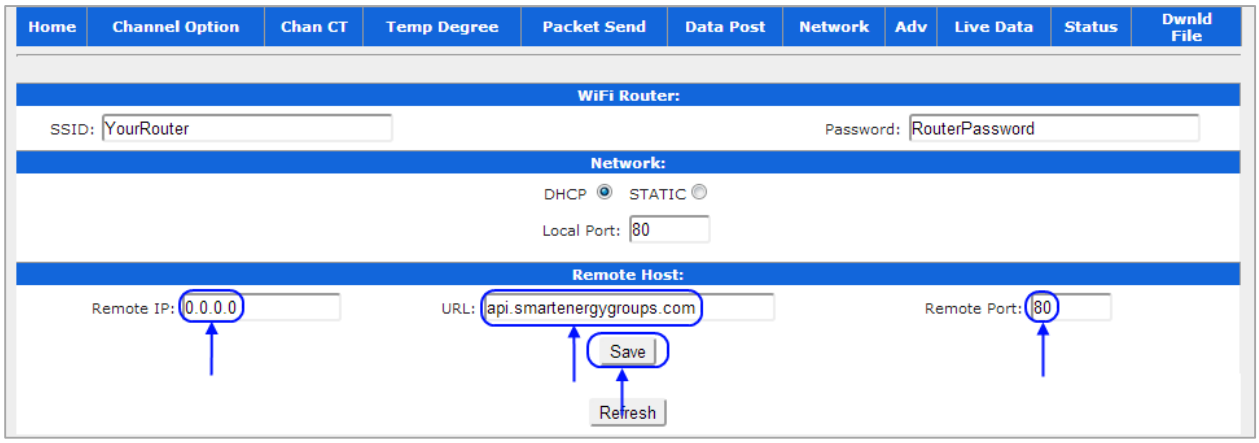

Figure 14

A GEM with the "WiFi Only" option is configured using the GEM Setup section.

Refer to Figure 14:

1. Click the **Network** link from the menu.
2. Set the **Remote Host** to "api.smartenergygroups.com".
3. Set the **Remote Port** to "80".
4. Set the **Remote IP** to "0.0.0.0".
5. Click the **Save** button and wait for the module to reboot

COMMUNICATION SETUP (SERIAL)

You can send to SmartEnergyGroups.com via the RS-232 port (or using an RS-232 to USB cable)if you have a PC running 24/7.

We have a piece of software called the GEM Bridge available in our software section at http://www.brultech.com/software which creates a connection between the PC's Serial Port and a TCP/IP connection on the network or internet. This allows the GEM to send packets over a network or internet without the need of the "WiFi" or "Ethernet" option.

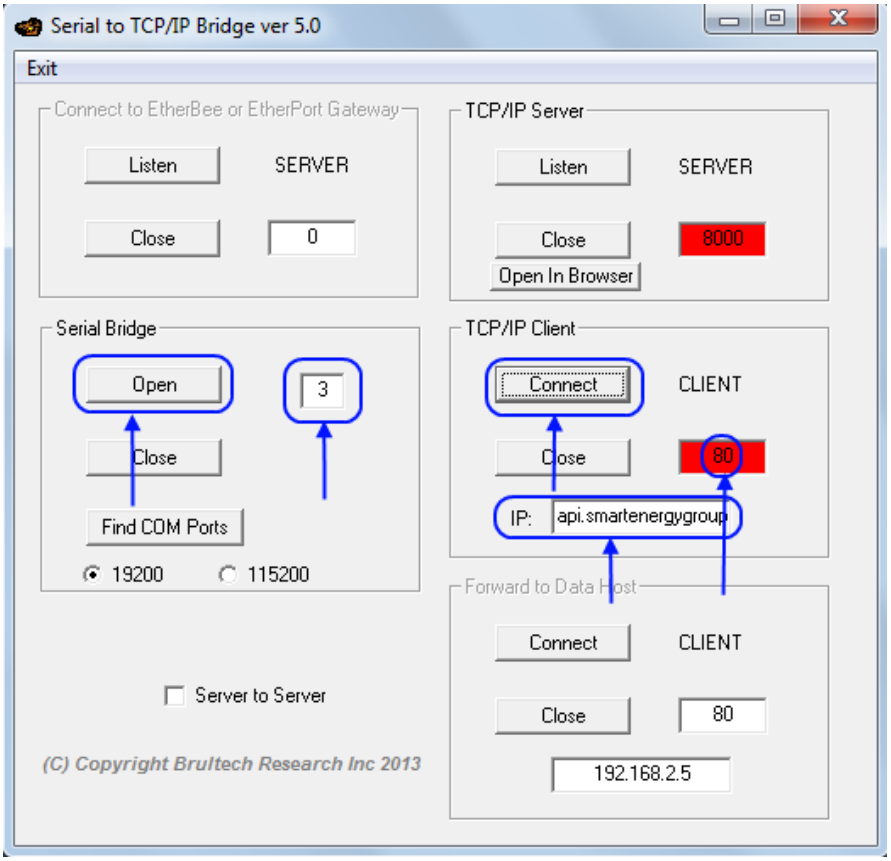

Figure 15

The bridge program is displayed in "Figure 15".

1. Click **Find COM Ports** in the Serial Bridge section. A box will open listing all found ports.
2. Select the **COM port** associated with the GEM. The port number will be transferred to the port box
3. Click **Open**. The port box should turn to green indicating a successful COM port connection
4. Set the **TCP/IP Client** to "api.smartenergygroups.com".
5. Set the **Port** to "80".
6. Click the **Connect** button.

The **Port** box will turn Green, and then Red after a packet is sent as the web server will disconnect from the program after receiving the packet. The program will then reconnect until the next packet is sent.

Alternate Option

Another option is to use a 3rd party script like BTMon.py using a binary packet format. Visit http://lancet.mit.edu/mwall/projects/power for more information on that script.

FINAL SMARTENERGYGROUPS CONFIGURATION

Now that you have the GEM configured, go back to the SmartEnergyGroups.com window.

1. Click the **Discover** button. Once you start the discovery process, wait for more than one minute **after** the device is found before doing the next step

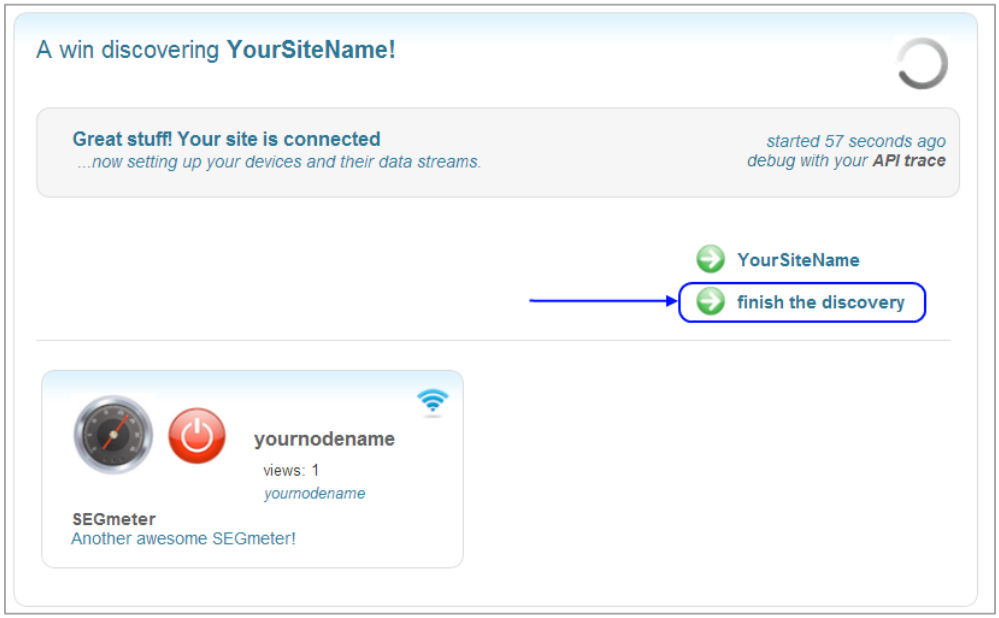

Figure 16

2. Click the **finish the discovery** button (Figure 16). This will cause your device to be initially setup. (Figure 17)

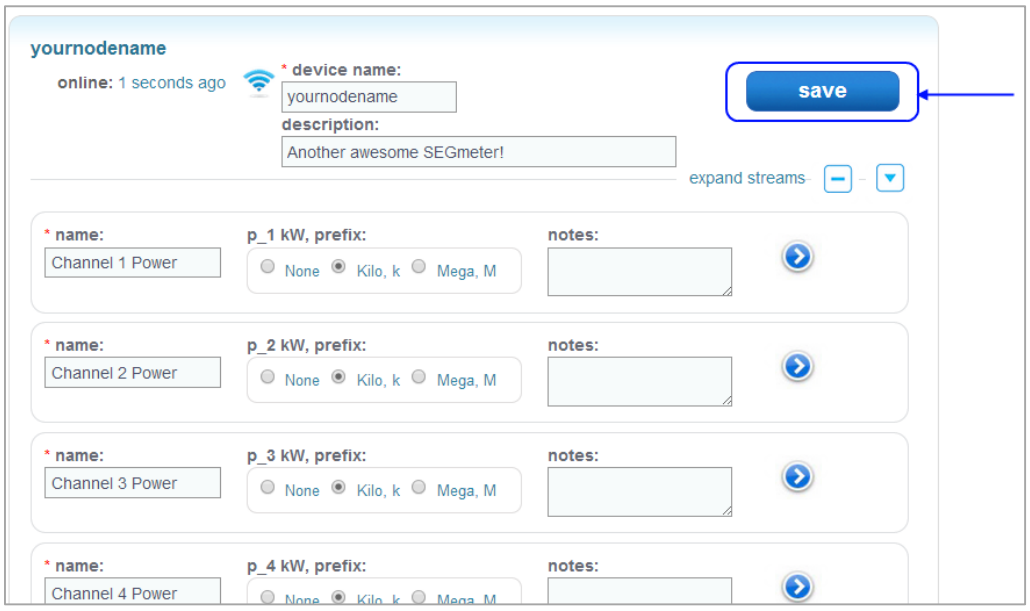

Figure 17

3. Assign a name corresponding to each channel. For example “Main house panel” or “Refrigerator”, etc. You should consult your “Channel Assignment” sheet which would have been used during the GEM installation.
4. Select the desired options then click the **Save** button.

Refer to information provided on the SEG site to create custom Dashboards and take advantage of the many options available.

TECHNICAL

PACKET INFORMATION

Power Information

For each of the 32 selected channels, the GEM sends Power (Watt) and Energy (Watt-Hour). Each packet includes the “watt” value however the “watt-hour” value is included in the packet only once per minute. This method improves accuracy and provides a high resolution load profile.

Watt

The watt value included in the packet is that of the most recent sample and not an average.

Watt-Hour

The watt-hour value included in the packet reflects the number of watt-hours used since the previous packet send. This provides an accurate representation on energy consumption.

Voltage

The voltage value is included in every packet.

Temperature

The temperature value in the packet is that of the last sample.

Pulse Counter

The pulse count is an incremental value